



A.D. 1813 N^o 3669.

S P E C I F I C A T I O N

OF

WILLIAM ROBERT WALE KING.

STEAM BOILERS, STILLs, &c.

L O N D O N :

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Steam Boilers, Stills, &c.

KING'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, WILLIAM ROBERT WALE KING, of Union Court, Holborn Hill, in the City of London, Tin Plate Worker, send greeting.

WHEREAS His most Gracious Majesty King George the Third, in and by
5 His Royal Letters Patent, under the Great Seal of Great Britain, bearing date at Westminster, the Twenty-second day of March last, for Himself, His heirs and successors, did give and grant unto me, the said William Robert Wale King, my executors, administrators, and assigns, His especial licence, full power, sole privilege and authority, that I, the said William Robert Wale
10 King, my executors, administrators, and assigns, and every of them, by myself and themselves, or by my and their deputy or deputies, servants or agents, or such others as I, the said William Robert Wale King, my executors, administrators, or assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term of years therein expressed,
15 should and lawfully might make, use, exercise, and vend, within that part of the United Kingdom of Great Britain and Ireland called England, the Dominion of Wales, and the Town of Berwick upon Tweed, in such manner as to me, the said William Robert Wale King, my executors, administrators, and assigns, or any of them, shall in his or their discretions seem meet, my
20 Invention of "CERTAIN IMPROVEMENTS IN THE APPLICATION OF HEAT TO THE PURPOSES OF BOILING WATER AND OTHER FLUIDS, AND TO OTHER USEFUL PURPOSES, AND OF THE APPARATUS FOR PERFORMING THE SAME;" in which said Letters Patent there is contained a proviso for making the same void in case I, the said William Robert Wale King, shall not particularly describe and ascertain the nature of
25 my said Invention, and in what manner the same is to be performed, by an

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instrument in writing under my hand and seal, and cause the same to be enrolled in His Majesty's High Court of Chancery within six calendar months next and immediately after the date of the said recited Letters Patent, as in and by the same, reference being thereunto had, will more fully appear.

NOW KNOW YE, that in compliance with the said proviso, I, the said 5 William Robert Wale King, do hereby describe and ascertain the nature of my said Invention, and in what manner the same is to be performed, as follows, that is to say:—

First, the boiler, pan, vat, or other vessel containing the liquor, fluid, or other matter which is to be heated, I construct of iron, copper, or other metal, in 10 such a manner as to admit the fire to be applied on the outside part (or circumference) of the lower part (or bottom) of the said boiler or other vessel, instead of making the fire in the centre of the bottom, as heretofore practised. Secondly, to make this more effectual, I construct two, three, four, or more small and separate fires, as the size of such boiler may require, instead of one 15 large fire. Thirdly, I cause the flame and heat arising from each of these fires to act upon the bottom or sides of the boiler beneath surfaces which are inclined to the horizon, and therefore have the fluids, &c. resting upon the upper side of them in a greater depth of such fluids or other matter at those parts where the greatest heat is applied, videlicet, at the parts immediately over 20 the fire upon the grates, and as the heat which is communicated by the flame decreases from these parts as it proceeds up the inclined surfaces, so does the depth of matter to be heated diminish in proportion, by which means I obtain a greater effect from the fuel than if all parts were of the same depth. Fourthly, I make all the fire which passes up beneath these different inclined 25 surfaces meet in one point, which is either on a level with it or but a little below the level of the surface of the fluid, &c. in the boiler, and from this point the smoke is conducted by one or more flues, which either pass upwards through the boiler or descend downwards through an aperture contiguous to the furnace, as may be most convenient. To more clearly explain my said 30 Invention to all to whom it may concern, I have hereunto annexed Drawings containing views of different applications of my principle. Figure 1 of the Drawing number 1 is a section of a boiler to raise steam either for an engine or any other purpose; it is of that shape usually known by the name of a waggon boiler. A, A, B, B, is a section of the boiler, which is filled with water 35 to the line C, C; the bottom B, B, has a rising part from D, D, up to E, E; at the bottom of the flue or chimney E, E, F, which carries off the smoke at each end of the boiler, is a fire-grate G, G, on which the fuel is burned, provided with fire doors H, H, of the usual kind, and ash pits I, I, beneath

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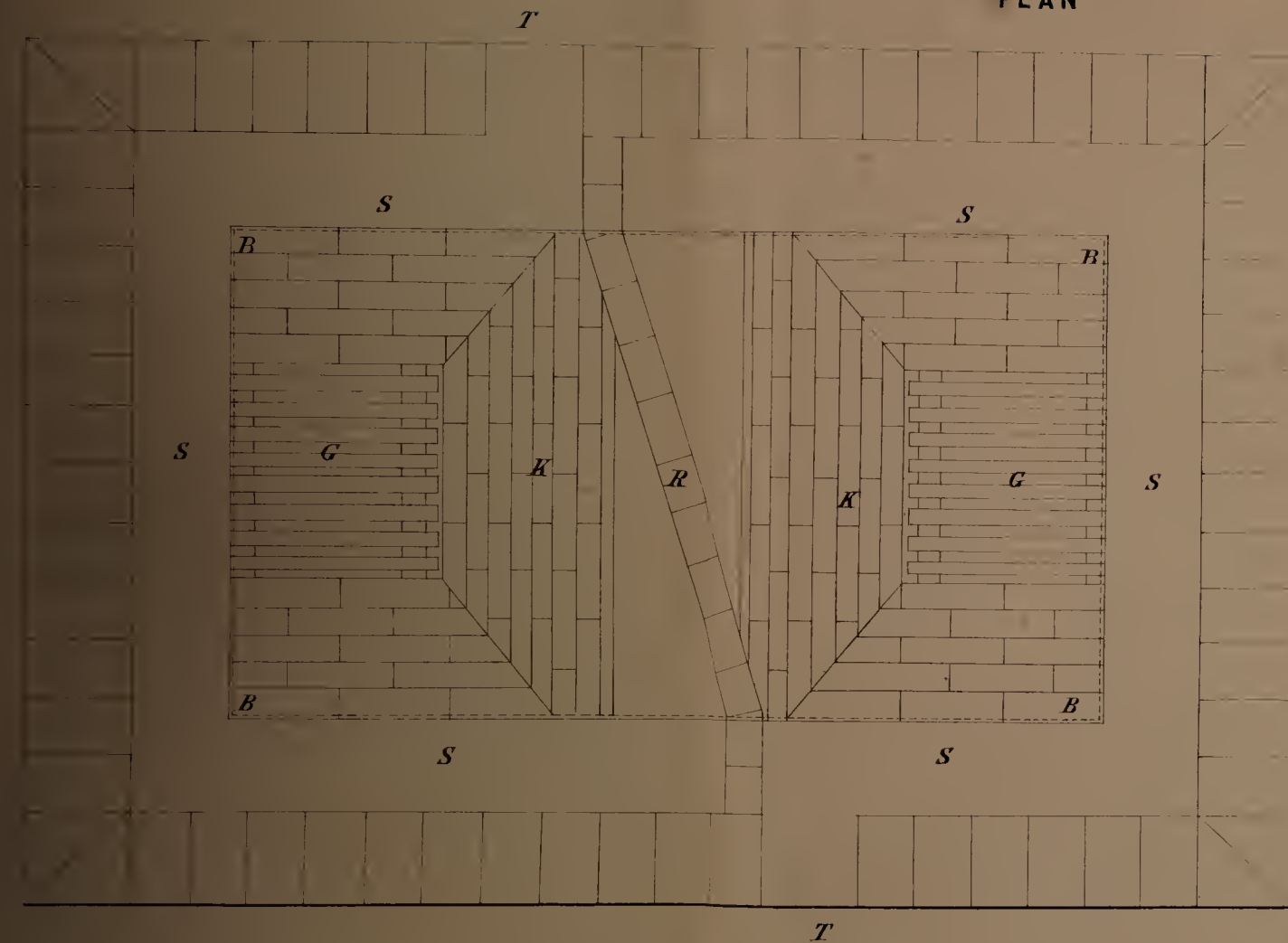
them. K, K, are inclined surfaces, or brick or stone work, or other proper materials, against which the flame strikes, and is thereby reflected against the bottom to act more powerfully beneath the inclined surfaces D, E, D, E; it is in this part that my third improvement consists, for it is evident that the
5 greatest heat will be at L, immediately over the fire, and here is the greatest depth of water, the heat of the flame proceeding up between the surfaces D, E, and K, being less than that of the fire, having a less depth of water to operate upon. The boiler has the usual furniture of steam boilers, as the man-hole N, the safety valve O, and the steam pipe P, which parts not being of my
10 Invention need no description. Sometimes instead of the chimney E, E, F, rising up through the boiler, I propose to carry two flues out sideways into separate stacks or chimneys; this is explained in the plan, Figure 2, in which the same letters denote the same parts in Figure 1, except the following. R is a division of bricks made across on the top of the inclined surface K, K,
15 and thus separating the two fires from each other, it conducts the flame and smoke of each by flues S, S, round the sides of the boiler, and thence it passes into the chimneys by the vents at T; the dotted lines S, S, S, S, in Figure 1 shew the direction of these flues, and their height. Figures 3 and 4 of the Drawing number 1 shew a steam boiler made in a circular form on my
20 principle; as the same letters of reference are used in this as for the other boiler, the same description will explain it. This has four separate fires instead of two, and the flames from each of which meet in one at the chimney E, E, F, being kept separated before they arrive at that point by the partitions R, R, R, R. The application of my Invention to a still is shewn in Figures
25 5 and 6 in Drawing number 2, Figure 5 being a plan, and Figure 6 a section; in the latter of these A, A, B, B, is the still, which has four fire-grates, marked G, G, G, G, in the same manner as the boiler last described, and the flame act on the surfaces D, E, but as it would not here be convenient to carry the chimney up through the still, the flue for the vent of the smoke is conducted
30 down through the centre at V, V, and then horizontally at W, till it reaches the chimney; this still may be fitted up with all the usual apparatus now in use, as the head *a*, the rowser *b*, to keep the malt contained within it in constant agitation when turned by the cog wheels *c* and handle *d*, or any other machinery may be applied, as my Invention only relates to the application of
35 the fire. If it is required to carry a circulating flue round the sides of a boiler or still which is set in this manner with four fires, it may be done as shewn by the dotted lines in Figure 5; thus in the brick work beneath the divisions marked R, small flues, shewn by the dotted lines *r, r, s, s*, are conducted from the central descending flue V to a circular flue *t*, surrounding the sides of the

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boiler or still, and from this it may by proper vents pass off into one or more chimneys situated on the outside of the brick-work at T. Another method consists in having a partition made in the upper part of the descending flue V, which will stop it up close; then the passages proceed from the central flue above the partition or stop, and conduct the heat round the circular flue *t*, till 5 it reaches the passages *s, s*, by which it is carried back to the central flue beneath the said partition, and thence it is carried off by the passage W to the chimney. Figures 7 and 8 shew a close brewing copper, heated according to my Invention; as the same letters are used in Figure 8 as in the former Figures, its structure will be understood from what has been before said, and 10 I have only to observe that it may be heated with four fires, like Figure 5, either with a circulating flue or without, or it may have two fires, as shewn in the plan, Figure 8; the grates for these are marked G, G, and K, K, are the inclined surfaces; as before, these lead the flames up to a flue S, S, extended across the bottom of the copper, the two fires being kept distinct by an oblique 15 partition R, the ends of the flue S leading to the circulating flues X, which after making half a turn round the copper have vent at T into the chimney or chimnies. The remaining apparatus of the copper, Figure 7, not being of my Invention, a brief enumeration of them is sufficient. 1 is the verticle spindle of the rowser, turned by the wheel *e* and handle *d*; on the lower end are the 20 iron arms *b, b*, from which chains are suspended to drag round upon the bottom. 2, 2, are braces to steady the spindle 1. 3, 3, is the pan of the copper heated by the steam thereof, which raises up the pipe 4, and descends through pipes 5, 5, dotted, into the contents of the pan. N, N, are the man-holes, and *b*, the lever to raise up the rowser from the bottom of the copper. The manner 25 of applying my Invention to small boilers, tea urns, stills, &c., to be heated by a lamp or lamps instead of a fire, is shewn in Figures 9 and 10 in the Drawing number 3, Figure 9 being a plan, and Figure 10 a section, in which the same letters of reference are used for the corresponding parts of the boiler and chimney as in those already described; the application of my Invention 30 consists in making the flames from the wick or wicks *f, f*, to strike against the lower part of the inclined botton of the boiler D, E, and ascend up the same to the chimney F, decreasing in effect as the depth of water or other fluid above it decreases. The lamp or lamps used for this purpose may be of the common construction, and do not constitute any part of my Invention; it 35 may be sufficient therefore to mention that *g, g*, is a plate in which the sockets for the wicks are fixed, and is loose for the purpose of being taken out, and easily and perfectly cleaned from the thickened oil, &c. *h, h*, is the receptacle for the oil, its top having slits or holes to receive the wick sockets without

FIG. 2.

PLAN



N^o 1

FIG. 3.

PLAN

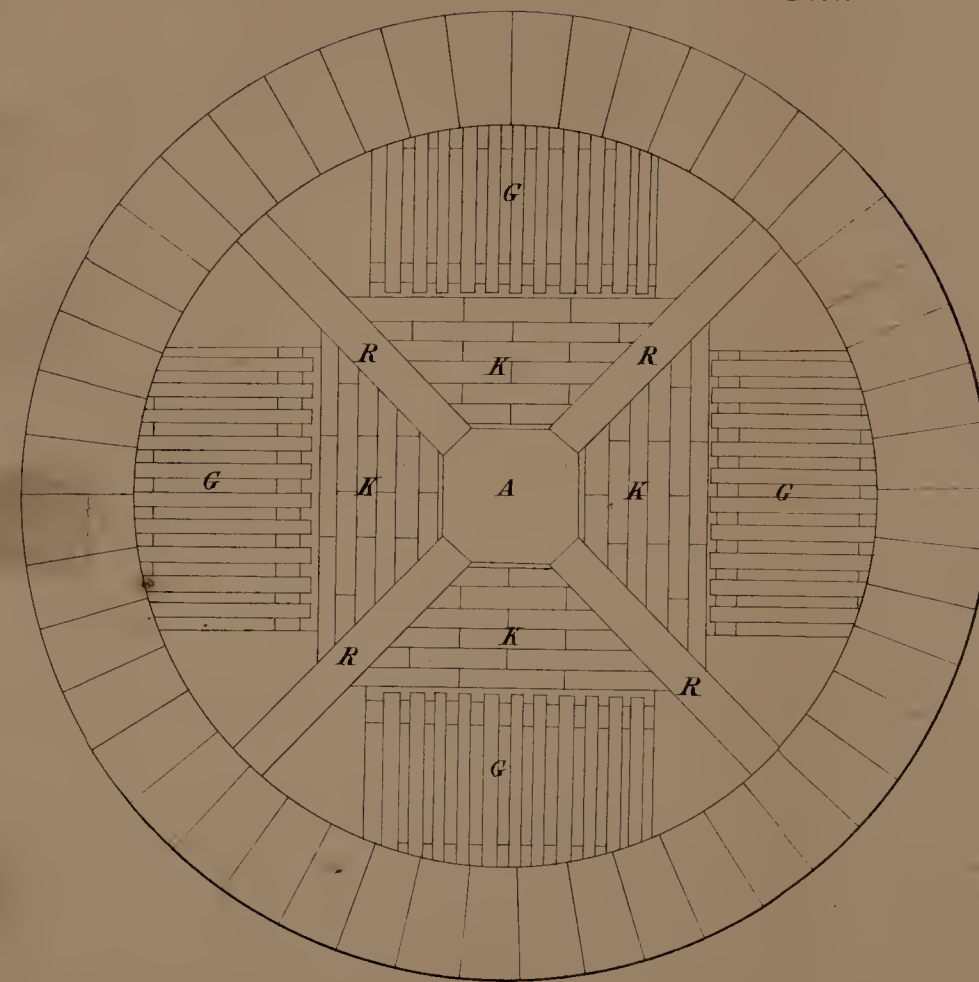
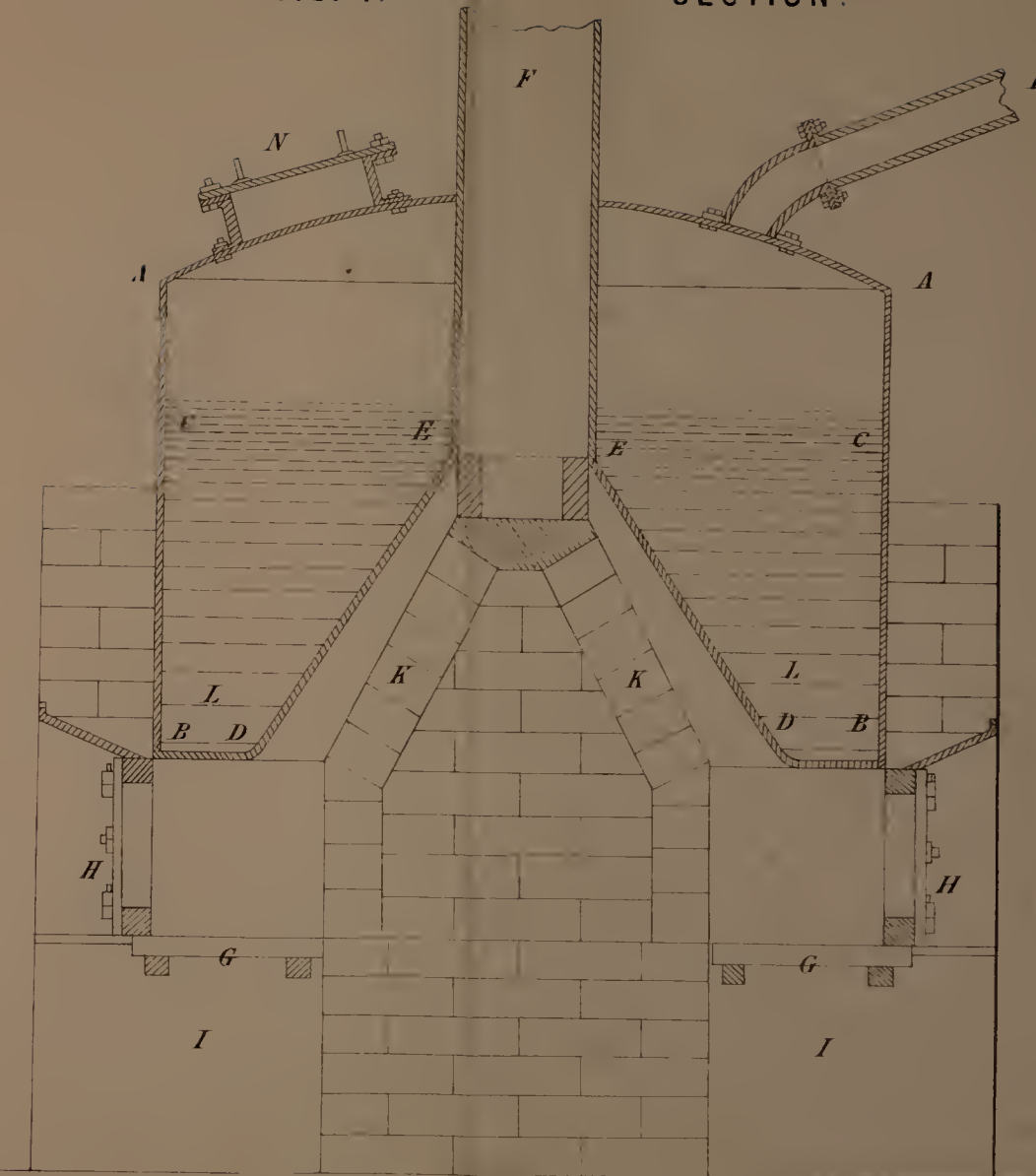


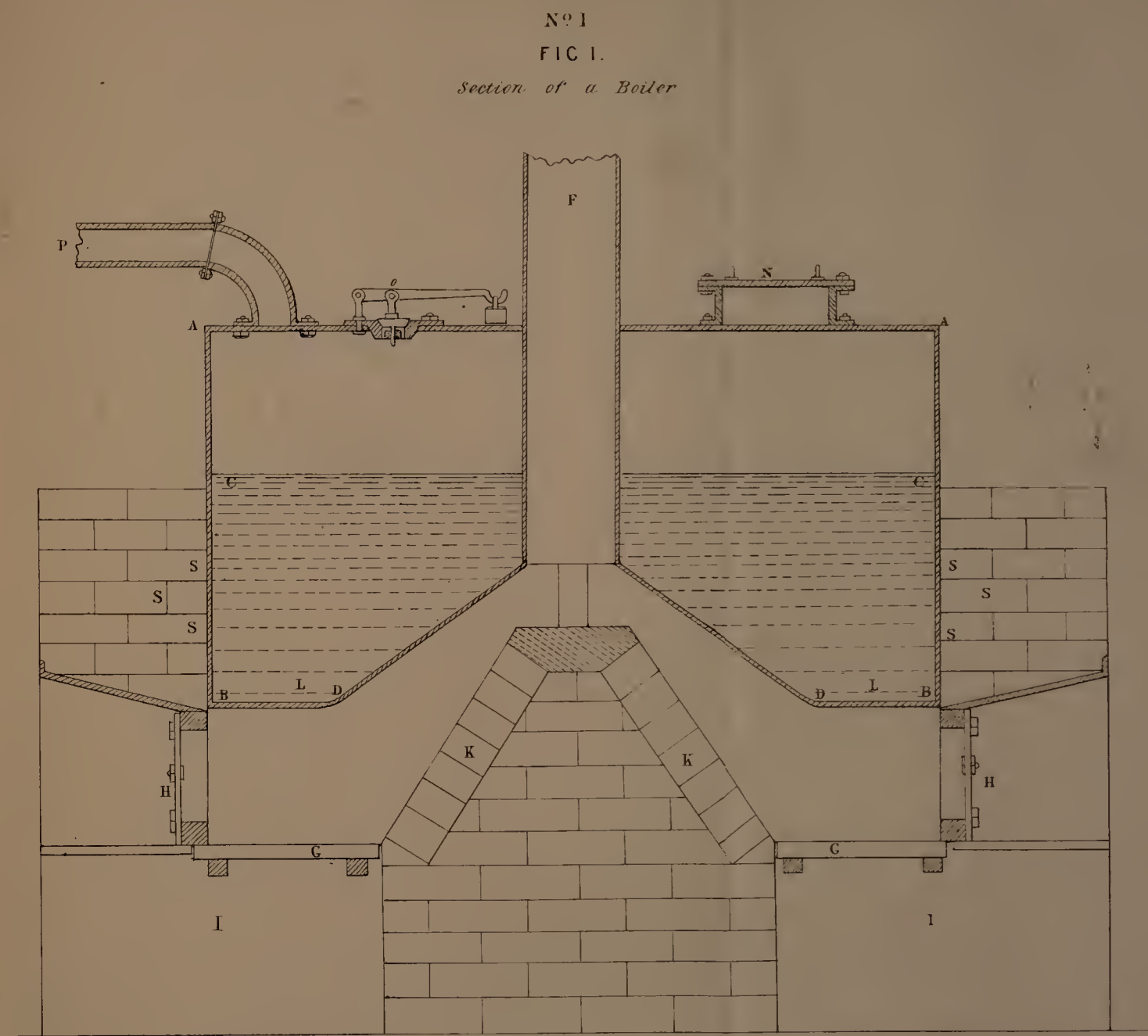
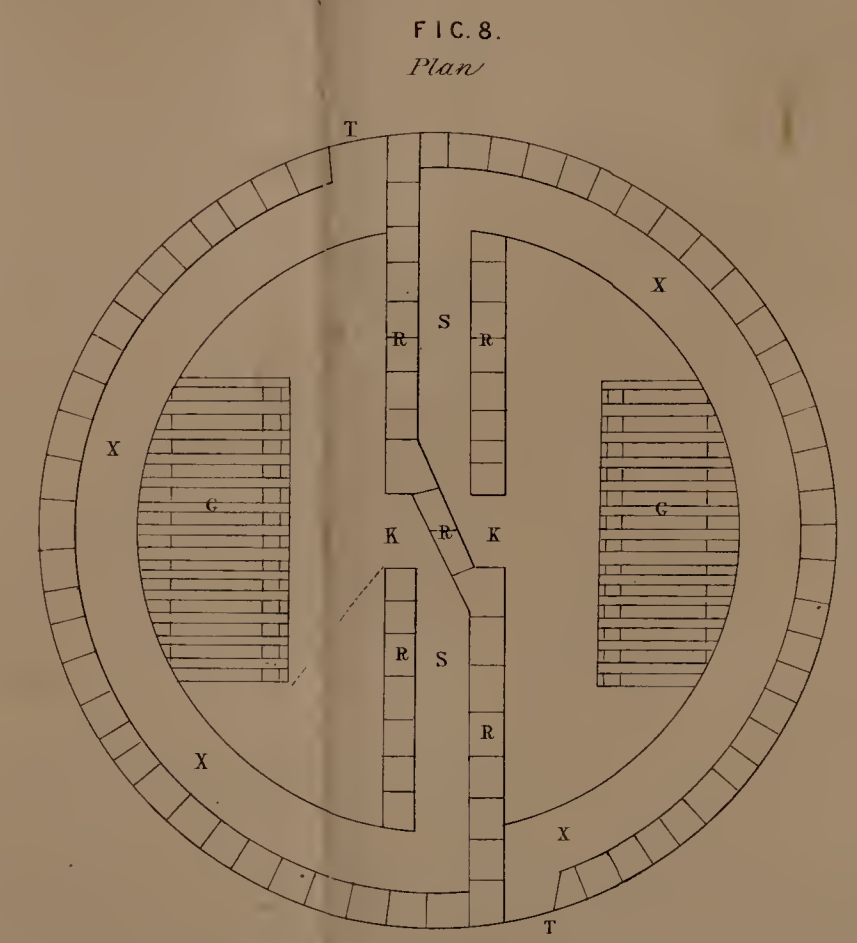
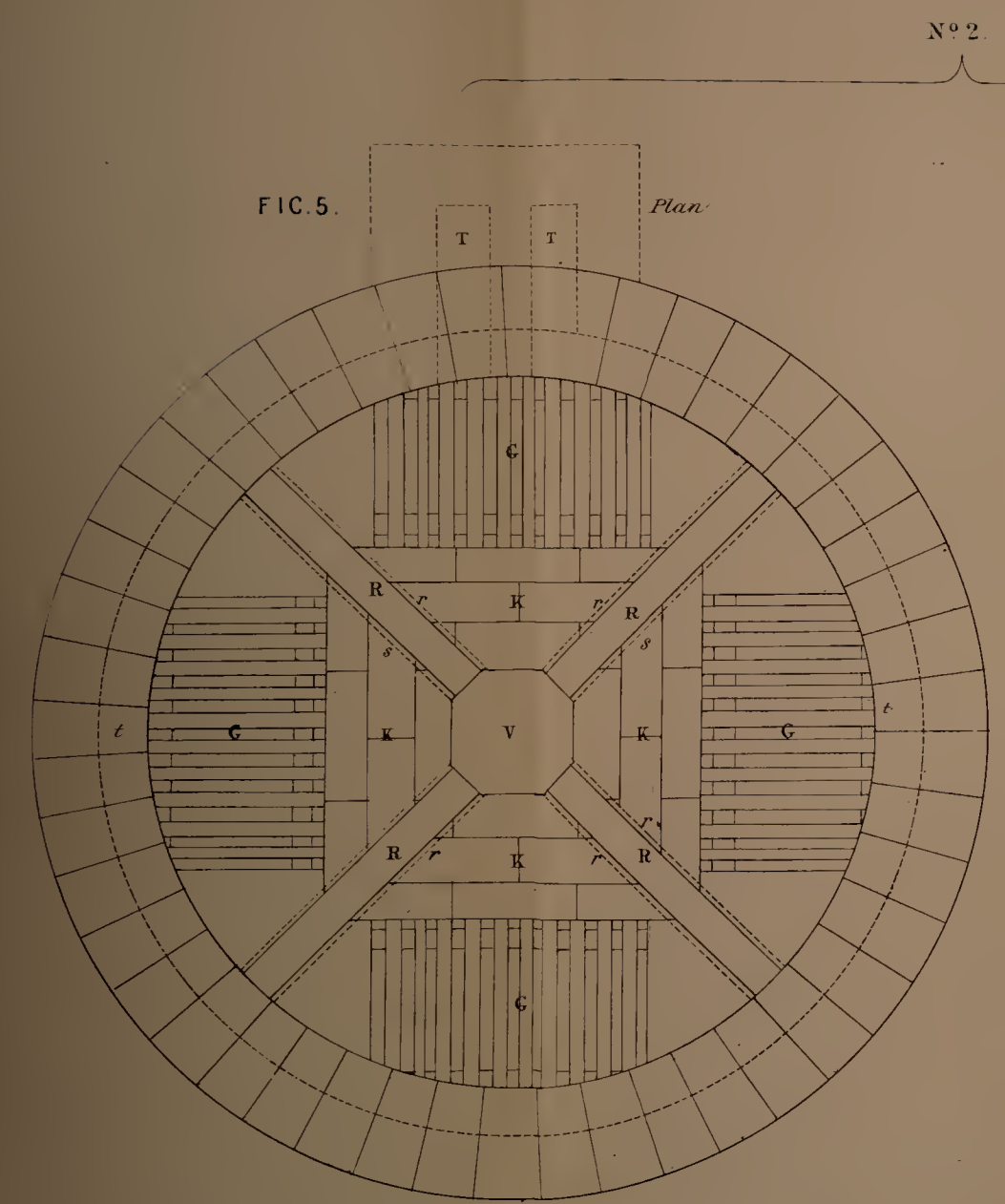
FIG. 4.

SECTION.



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N^o 2
FIG. 6.
Section of a stall

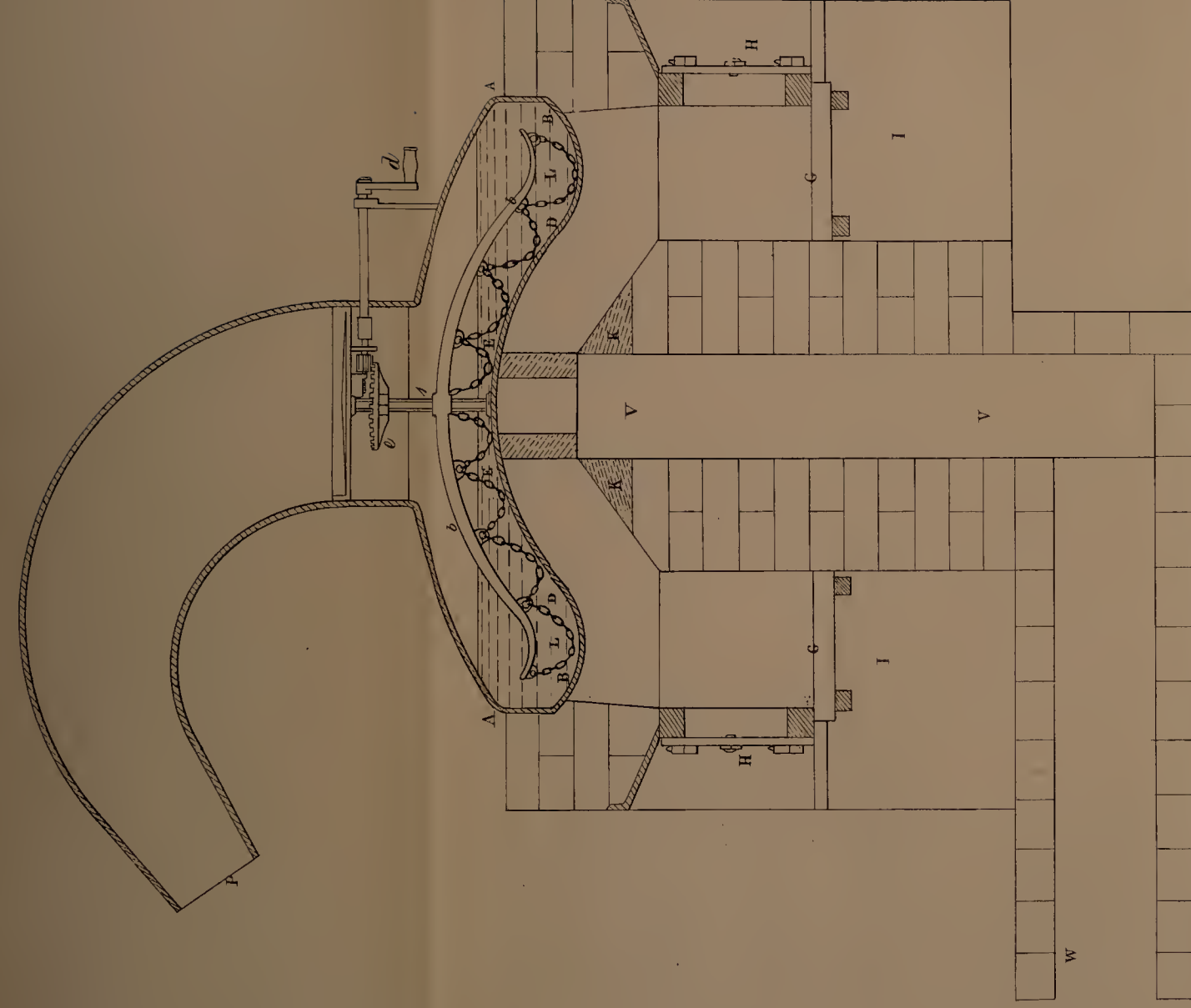
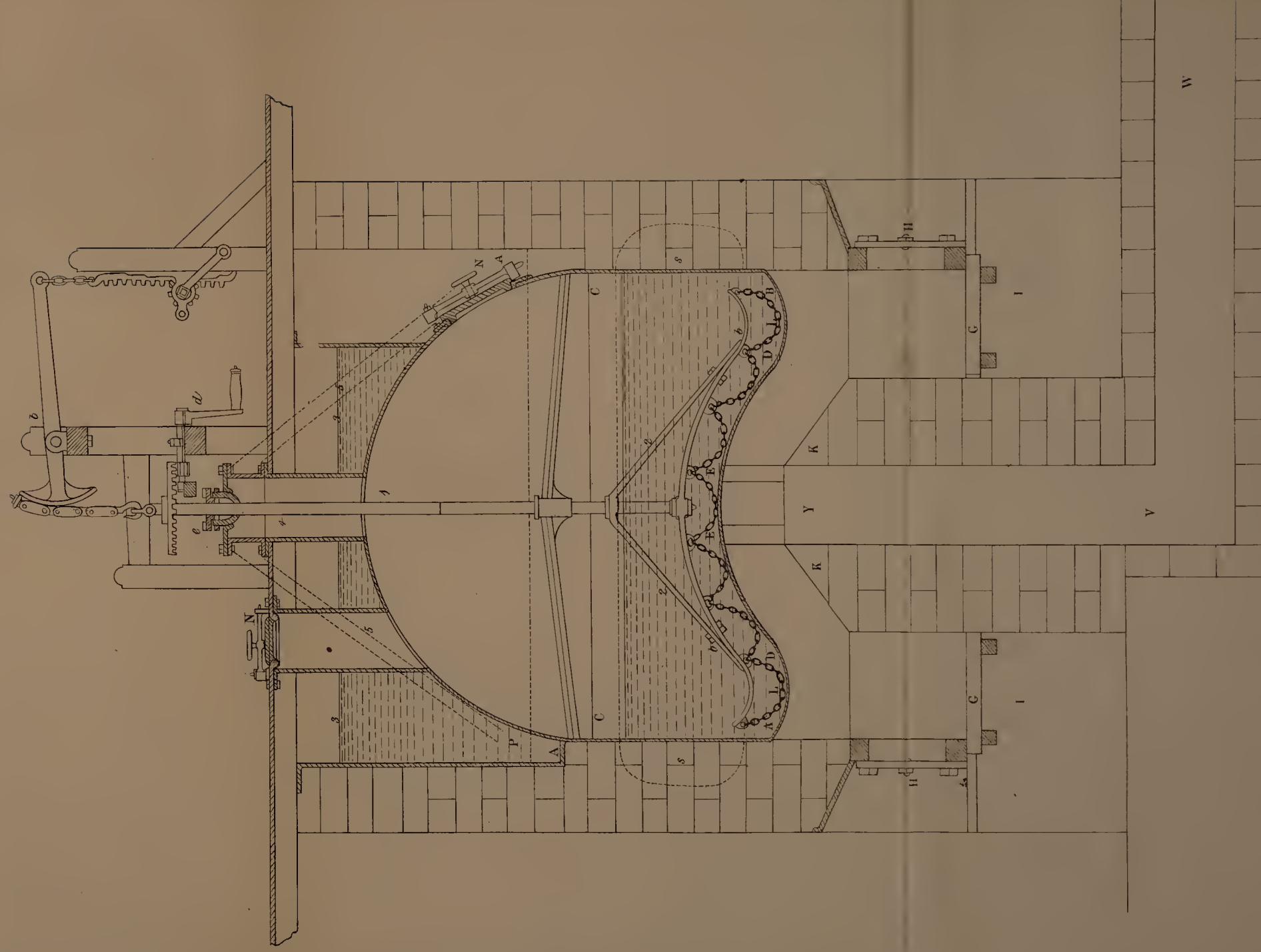
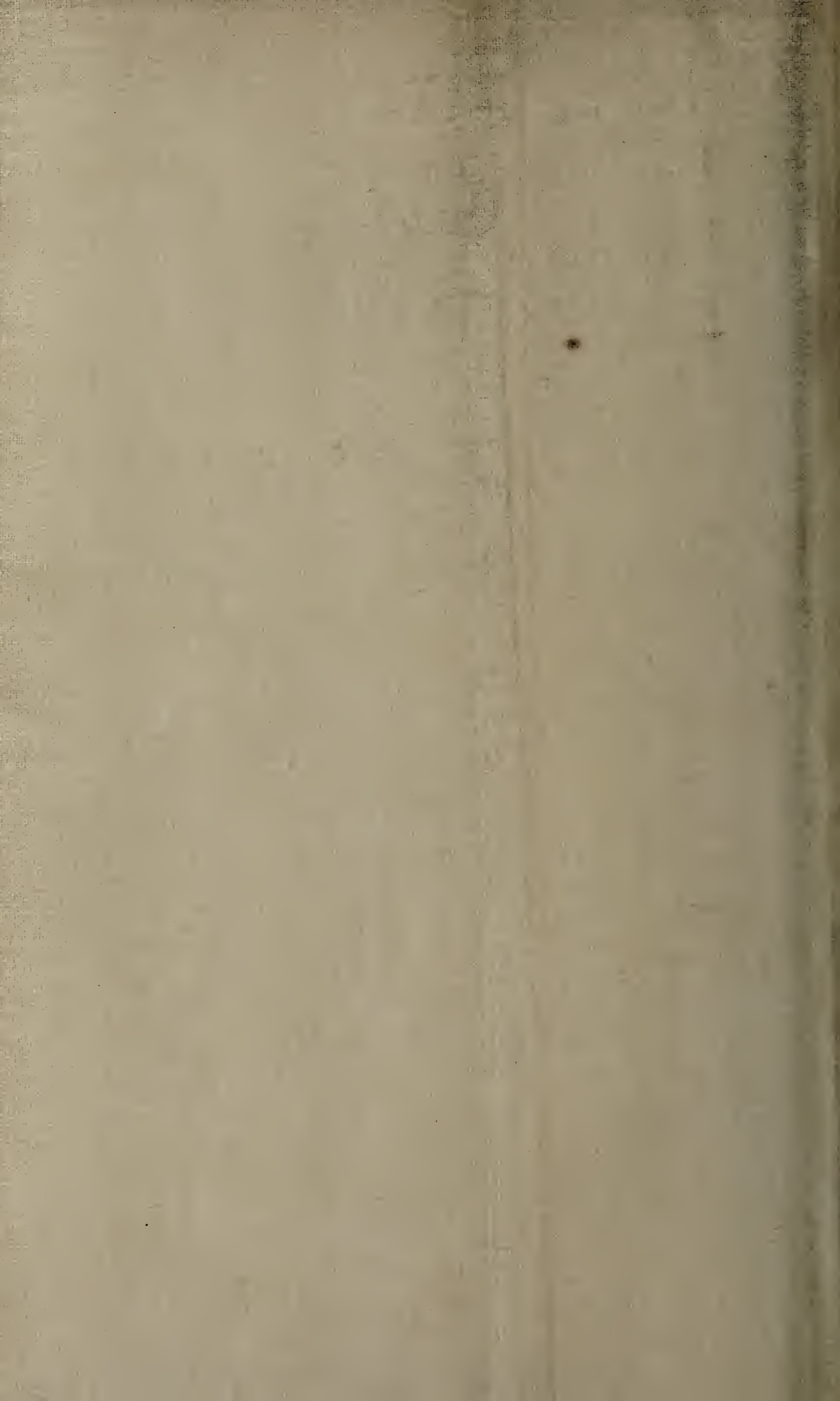


FIG. 7.
Section





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N^o 3.

FIG. 9.

Plan of a lamp boiler.

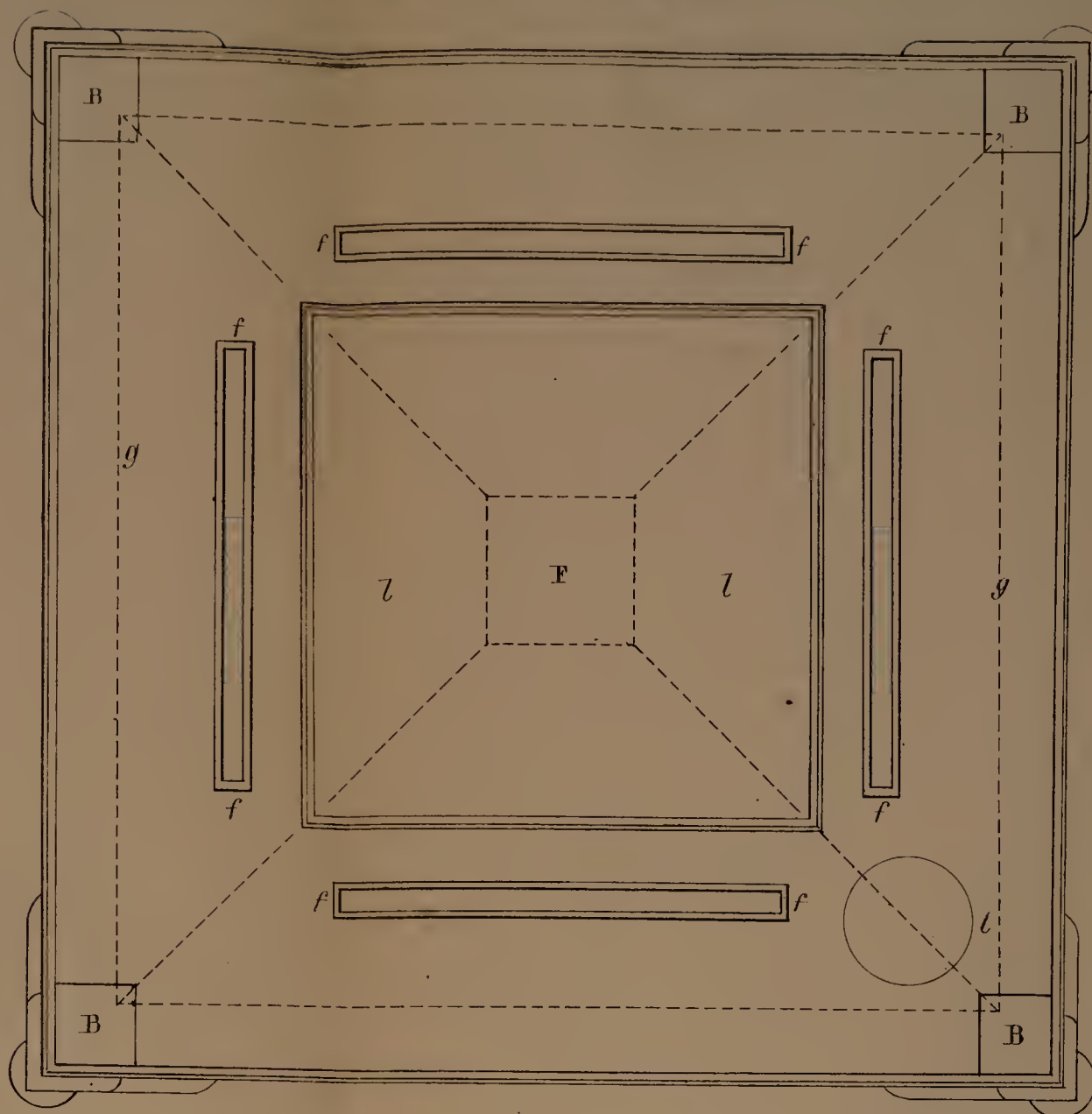
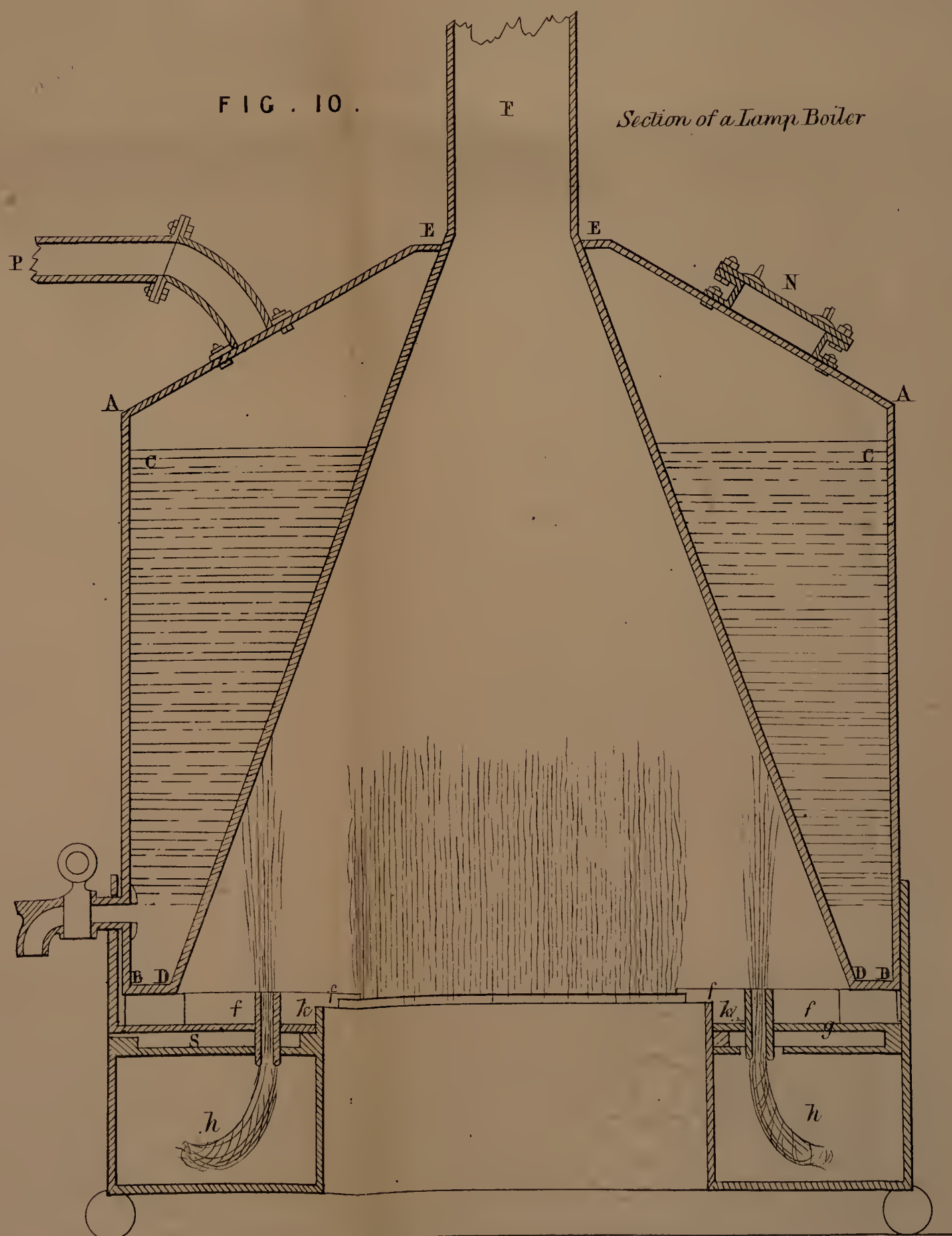


FIG. 10.

Section of a Lamp Boiler



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touching the sides of such slits or holes. *i* is a hole for supplying oil. *k, k,* is an opening for the passage of air sideways to the flame, and *U* is a larger opening from the bottom for the same purpose.

5 In witness whereof, I have hereunto set my hand and seal, the Twentieth day of September, in the year of our Lord One thousand eight hundred and thirteen.

W. R. W. KING.

10 **AND BE IT REMEMBERED**, that on the same Twentieth day of September, in the year above mentioned, the aforesaid William Robert Wale King came before our Lord the King in His Chancery, and acknowledged the Specification aforesaid, and all and everything therein contained, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute in that case made and provided.

Inrolled the Twenty-first day of September, in the year above written.

LONDON :

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1854.

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